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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Barbara D. Kotzias

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03/01/2004

CHRISTIE, PARKER & HALE, LLP
350 WEST COLORADO BOULEVARD
SUITE 500
PASADENA, CA 91105

EXAMINER

GRAYBILL, DAVID E

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/896,452	Applicant(s) KOTZIAS ET AL.	
	Examiner David E Graybill	Art Unit 2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14, 16-18 and 20-24 is/are pending in the application.
- 4a) Of the above claim(s) 1-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 11-14, 16-18 and 20-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

The reply filed on 11-10-3 is not fully responsive to the prior Office Action because applicant has failed to comply with the requirement under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable, and to include an identification of the species that is elected consonant with the requirement, and a listing of claims readable thereon. See 37 CFR 1.111.

Because the response appears to be bona fide, but through an apparent oversight or inadvertence the response is incomplete, and in order to continue to afford applicant the benefit of compact prosecution, the requirement to complete the response within a one month time limit is waived, the amendment is entered, and the claims are examined on the merits.

Claims 1-10 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the paper filed on 7-3-3.

In the rejections infra, reference labels are generally recited only for the first recitation of identical elements.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 11-14, 16-18 and 20-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Davis (5214307) and Guillot (6197618).

At column 1, lines 54-56 and 62-63, column 2, lines 37-45, and column 3, line 55 to column 4, line 37, Davis teaches the following:

11. An assembly comprising a semiconductor die 14 attached to a surface of a leadframe 40 by a viscous adhesive 20, said leadframe including at least three pedestals 42 one of protruding from and formed over said surface,

each of said pedestals having substantially the same pedestal height, and said semiconductor die contacting each of said pedestals.

12. The assembly as in 11, in which said pedestal height lies within the range of 1-2 mils.

13. The assembly as in 11, in which said pedestals each include a top portion which contacts said semiconductor die and said top portion includes an area 2 within the range of 490 micron² and 2000 micron² .

14. The assembly as in 11, in which each of said pedestals are conical in shape and include a base coincident with said surface and an apex which contacts said semiconductor die.

16. The assembly as in 11, wherein said pedestals each comprise raised portions of said leadframe.

17. The assembly as in 11, wherein each of said pedestals are discrete members joined to said surface.

20. The assembly as in 11, wherein said pedestals are substantially cylindrical in shape and include substantially flat tops which contact said semiconductor die.

21. The assembly as in 11, in which said semiconductor die includes an integrated circuit inherently formed thereon, an opposed bottom surface contacting said viscous adhesive and said pedestals and facing said

leadframe, and sides, and said viscous adhesive extends at least partially up said sides.

22. The assembly as in 11, in which said viscous adhesive laterally surrounds each of said pedestals and is interposed between said semiconductor die and said surface, has a thickness substantially equal to said pedestal height, and therefore contacts and adheres to each of said semiconductor die and said leadframe.

23. The assembly as in 22, in which said semiconductor die includes a top surface, an opposed bottom surface contacting said viscous adhesive and said pedestals and facing said leadframe, and sides, and said viscous adhesive extends at least partially up said sides.

24. The assembly as in 22, in which said viscous adhesive is characterized as being void-free between said semiconductor die and said surface.

To further clarify the teaching that the pedestals are substantially cylindrical in shape and the particular claimed dimensions, it is noted that, as cited, Davis teaches that the bumps can be any height, size and shape.

However, Davis does not appear to explicitly disclose that the viscous adhesive is solder.

Nonetheless, at column 1, lines 14-19 and 34-36; column 2, lines 47-56; and column 3, lines 6-25, Guillot discloses a viscous solder adhesive "solder paste." Moreover, it would have been obvious to use the solder of

Guillot as the viscous adhesive of Davis because it would provide the viscous adhesive of Davis.

Also, Davis does not appear to explicitly disclose the following:

18. The assembly as in 11, wherein said leadframe is formed of copper.

23. The assembly as in 22, in which said semiconductor die includes a top surface including circuitry thereon.

To this end, the well-known in the art statement in the previous office action is taken to be admitted prior art because applicant failed to traverse the assertion of official notice.

The art made of record and not applied to the rejection is considered pertinent to applicant's disclosure. It is cited primarily to show inventions similar to the instant invention.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action because the scope of claims 11-14, 16-18 and 20-24 were not previously limited to solder. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-


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MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to Group 2800 Customer Service whose telephone number is 703-306-3329.

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (571) 272-1930. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is (703) 872-9306.



David E. Graybill
Primary Examiner
Art Unit 2827

D.G.

8-Feb-04